(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 154601 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. VI) THEORY EXAMINATION 2013-14

FERMENTATION BIOTECHNOLOGY

Time : 3 Hours *Total Marks : 100*

Note :– **All** questions are compulsory. All questions carry equal marks.

1. Attempt any **four** parts :

   (a) What is Fed Batch Culture ? Give the reasons to operate the reactor in fed batch mode.

   (b) Compare the traditional versus modern concepts in fermentation industries.

   (c) Explain the use of water as an important constituent for fermentation.

   (d) Why pretreatment of raw materials are required ? How pretreatments are done ?

   (e) What is diauxic growth ? When does it occur in batch cultivation ?

   (f) Discuss the desirable properties of a raw material to be used in fermentation industry.

2. Attempt any **four** parts :

(a) Differentiate between primary and secondary metabolites.

(b) Write a short note on overproduction of metabolites.

(c) Discuss the major components of a typical microbial fermentation media.

(d) What do you understand by Preservation ? Discuss various techniques to preserve the microorganisms.

(e) What is feedback repression ? Explain with suitable examples.

(f) Explain Crabtree Effect. How does it differ from Glucose effect ?

3. Attempt any **two** parts :

(a) State the role of biofuel industry in supplementing fuel demand in our country.

(b) How does fermentation of genetically engineered microbes differ from wild types microbes ?

(c) Discuss briefly about fermentative production of :

(i) Amylases

(ii) Proteases.

4. Attempt any **two** parts :

(a) Describe the role of mutations in the development of industrially important organisms.

(b) Write briefly about the optimization of medium and process conditions in a fermentor.

(c) Explain batch, fed-batch and continuous fermentation process in detail.

5. Attempt any **two** parts :

(a) Discuss the advantages and disadvantages of fermentation process over chemical synthesis.

(b) Develop an outline for the process development involving strain selection, improvement, reactor design, process optimization and control for the industrial production of a secondary metabolite.

(c) State the future prospects of the fermentation industry in our country.